Remarks

Applicant respectfully requests that the Examiner reconsider the present application in light of the above amendments and following remarks. Claims 1, 4 and 5 have been amended and claims 2 and 3 have been cancelled. No claims have been added. Therefore, claims 1 and 4-17 are pending in the present application.

Claims 1-17 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,731,564 to Diener et al. ("the Diener reference") in view of U.S. Patent No. 6,267,559 to Mossman et al. ("the Mossman reference"), U.S. Patent No. 5,996,553 to Sanvido et al. ("the Sanvido reference"), and U.S. Publication No. 2003/0143445 to Daniel et al. ("the Daniel reference"). Claims 2 and 3 have been cancelled, therefore the rejection of these claims is moot. Applicant respectfully traverses the rejection to the remaining claims.

Amended claim 1 is directed to a fuel cell assembly including an actuator for moving a pintle against a variable load. A method for increasing the torque output of the actuator to overcome a load exceeding the nominal torque output capability of the actuator comprises the steps of sensing when a high load condition exists, and increasing voltage provided to the actuator to increase the torque output thereof when the high load condition exists.

In making the above rejection, the Examiner stated that it would have been obvious to one of ordinary skill in the art to combine the apparatus in the Diener reference with the pintle and air valve in the Sanvido reference and the fuel cell in the Diniel reference for improved torque control. *See Final Office Action*, pg. 2.

Applicant submits that the teachings of the Diener reference are non-analogous art and therefore do not support a prima facie case of obviousness.

In resolving the question of obviousness under 35 U.S.C. § 103(a), the prior art reference must be in the inventor's field of endeavor or reasonably pertinent to the particular problem with which the inventor as involved. *See In re Deminski*, 230 USPQ 313 (Fed. Cir. 1986). In making a determination of whether a reference is reasonably pertinent to the particular problem with which the inventor is involved, the Federal Circuit has stated that "[a] reference is reasonably pertinent if . . . it is one which, because of the matter with which it deals, logically would have commended itself to the inventor's attention in considering his problem . . . ." *In re Clay*, 23 USPQ.2d 1058, 1060-61 (Fed. Cir. 1992). If the prior art reference is directed to a different purpose, the inventor would have less motivation or occasion to consider it. *See id; see also Wang Lab., Inc. v. Toshiba Corp.*, 26 USPQ.2d 1767 (Fed. Cir. 1993).

The Diener reference is directed to a machine tool having an electrical torque-type motor (34) that moves a tailstock (20) relative to a headstock (12) to hold a workpiece (16) therebetween. *See Diener*, Col. 2, lines 6-45. In contrast, the present invention, as recited in claim 1, relates to a fuel cell assembly including an actuator for moving a pintle against a variable load. A device for holding a workpiece between a tailstock and a headstock is not within the same field of endeavor related to fuel cell assemblies.

Moreover, the teachings of the Diener reference are not reasonably pertinent to the specific problem that the inventor of the present invention was involved. The

motor in the Diener reference operates to produce a high torque output for the purpose of *locking* the workpiece (16) in secure engagement with the device (10). *See Diener*, Col. 3, lines 26-42 (emphasis added). In contrast, the actuator in claim 1 operates to overcome a variable load imposed on a pintle, and *move* the pintle, when manifold pressures in the fuel cell assembly are high and the pintle is closed or nearly closed. *See Claim 1*; *Specification*, pg. 3, lines 19-25 (emphasis added). The purpose of the Diener reference (i.e., securing the workpiece) is not reasonably pertinent to the intended purpose of the present invention (i.e., moving the pintle), therefore there is no substantial evidence to conclude that the Diener reference is reasonably pertinent and analogous to the present invention. As such, there is no motivation or suggestion to combine the teachings in the Diener reference with the fuel cell disclosed in the Daniel reference. *See In re Oetiker*, 24 USPQ.2d 1443 (Fed. Cir. 1992) (stating that it is not proper to combine non-analogous art);

Furthermore, the Examiner cited both the Diener and Daniel references without providing any reason why one skilled in the art would be been motivated to apply the teachings of the machine tool in the Diener reference in a fuel cell application as provided in the Daniel reference. It is not permissible to simply cite different features of the claimed invention from different prior art sources without explaining the motivation to combine or modify the prior art references. *See In re Fritch*, 23 USPQ.2d 1780 (Fed. Cir. 1992).

For at least the foregoing reasons, Applicant requests that the rejection of claim 1 be withdrawn. As claims 4-6 depend from claim 1, these claims are also not

taught or suggested by the references of record for at least the same reasons set forth with respect to claim 1.

Dependant claim 4 recites an additional subject matter that is not taught or suggested by the references of record. Claim 4 states that the voltage increase is obtained from the electrical output of the fuel cell assembly. The Diener reference does not teach or suggest using a fuel cell assembly to provide the voltage increase for the motor (34). For this additional reason, Applicant requests that the rejection of claim 4 be withdrawn.

Claim 7 is directed to an apparatus including a stepper motor for actuating a moveable element, the stepper motor having a nominal torque output range at a nominal input voltage. An improvement for extending the torque output range of the motor comprises: a) means for determining an actuating load on the motor; b) means for providing a voltage input to the motor greater than the nominal input voltage; and c) control means connected to the determining means and the providing means for responding when the actuating load exceeds a predetermined load value. The control means increases the voltage applied to the motor above the nominal voltage and thereby increases the torque output of the motor to move the moveable element.

None of the references of record teach or suggest an apparatus including means for providing a voltage input to the motor that is greater than the nominal input voltage as recited in claim 7. Since this claim limitation is in means-plus function format, it should be examined in accordance with the two-step analysis provided by the Federal Circuit. *See Golight Inc. v. Wal-Mart Stores Inc.*, 69

USPQ.2d 1481, 1486 (Fed. Cir. 2004); *see also* MPEP 2182. "The first step in construing a means-plus function claim limitation is to define the particular function of the claim limitation." *Budde v. Harley-Davidson, Inc.*, 58 USPQ.2d 1801, 1806 (Fed. Cir. 2001). This portion of claim 7 relates to the function of providing a voltage input to the motor that is greater than the nominal input voltage.

After determining the function, the next step is "to look to the specification and identify the corresponding structure for that function." *See Golight*, 69 USPQ.2d at 1486. The specification of the present invention states that a second and higher voltage source provides the higher voltage to the stepper motor, thus increasing the torque output of the motor to meet the immediate torque requirement. *See Specification*, pg. 3, lines 29-31. The second and higher voltage source is a separate source of voltage, in addition to the first input voltage that provides nominal input voltage to the stepper motor. *See id.* at 14-16. Since the specification defines what is meant by the limitation for the purposes of the claimed invention, the examiner should interpret this means-plus function limitation as including a second and higher voltage source that is separate and distinct from the first input voltage. *See* MPEP 2182, pg. 2100-227.

The Diener reference does not teach or suggest a second and higher voltage source that is separate and distinct from the first input voltage. The Diener reference only discloses a single motor (34) and voltage source that is used to hold the workpiece (16) between the tailstock (20) and the headstock (12). For at least this reason, Applicant requests that the rejection of claim 7 be withdrawn.

Furthermore, none of the references of record teach or suggest an apparatus including control means connected to the determining means and the providing means for responding when the actuating load exceeds a predetermined load value and to increase the voltage applied to the motor above the nominal voltage as recited in claim 7. Since this claim limitation is also in means-plus function format, it should be examined in accordance with the two-step analysis set forth above. This particular means-plus function limitation includes two functions. The first function is to respond when the actuating load exceeds a predetermined load value, and the second function is to increase the voltage applied to the motor above the nominal voltage. The specification of the present invention states that the electronic controller performs both of these functions. *See Specification*, pg. 3, lines 23-31. Therefore, this portion of claim 7 should be interpreted as including an electronic controller that is connected to the determining means and the second and higher voltage source for responding when the actuating load exceeds a predetermined load value and to increase the voltage applied to the motor above the nominal voltage.

The Diener reference does not teach or suggest an electronic controller that is connected to a second and higher voltage source, since, as stated above, the Diener reference does not include a second source of voltage that is separate from the input voltage. In addition, the Diener reference does not disclose a controller that responds when the actuating load exceeds a predetermined load value of the motor (34). Instead, the Diener reference states that a set button (58) on the control panel (42) is manually depressed when the motor (34) stalls to increase the voltage

applied to the motor (34). *See Diener*, Col. 3, lines 26-36. For this additional reason, Applicant requests that the rejection of claim 7 be withdrawn

As claims 8-11 depend from claim 7, these claims are also not taught or suggested by the references of record for at least the same reasons set forth with respect to claim 7. Applicant requests that the rejection of these claims also be withdrawn.

Dependant claims 8-11 recite additional subject matter that is not taught or suggested by the references of record. For instance, claim 8 states that the apparatus is a fuel cell assembly including at least one pintle-type valve and the moveable element is a pintle thereof. As stated above with respect to claim 1, the Diener reference is non-analogous art and not properly combinable with the fuel cell assembly disclosed in the Daniel reference. For this additional reason, Applicant requests that the rejection of claim 8 be withdrawn.

Claim 12 is directed to an apparatus including a stepper motor for actuating a moveable element, the stepper motor having a nominal torque output range at a nominal input voltage. An improvement for extending the torque output range of the motor comprising an operating parameter, a higher voltage source, and an electronic controller. The operating parameter determines an actuating load on the motor. The higher voltage source provides a voltage input to the motor that is greater than the nominal input voltage. The electronic controller is connected to the operating parameter and the higher voltage source for responding when the actuating load exceeds a predetermined load value. Further, the electronic controller increases the

voltage applied to the motor above the nominal voltage and thereby increases the torque output of the motor to move the moveable element.

None of the references of record teach or suggest an apparatus including an electronic controller connected to an operating parameter and a higher voltage source as recited in claim 12. When the motor (34) in the Diener reference stalls, a user must manually depress the set button (58) to increase the voltage applied to the motor (34). *See* Col. 3, lines 31-34. The mechanism that provides the increase in voltage to the motor in the Diener reference is not connected to an electrical controller, that is turn connected to an operating parameter that determines the actuating load on the motor. Thus, Applicant requests that the rejection of claim 12 be withdrawn

As claims 13-17 depend from claim 12, these claims are also not taught or suggested by the references of record for at least the same reasons set forth with respect to claim 12. Applicant requests that the rejection of these claims be withdrawn.

Dependant claims 13-17 recite additional subject matter that is not taught or suggested by the references of record. For instance, claim 13 states that the apparatus is a fuel cell assembly including at least one pintle-type valve and the moveable element is a pintle thereof. As stated above with respect to claim 1, the Diener reference is non-analogous art and not properly combinable with the fuel cell assembly disclosed in the Daniel reference. For this additional reason, Applicant requests that the rejection of claim 13 be withdrawn.

Conclusion

In light of the foregoing, Applicant submits that claims 1 and 4-17 are in condition for allowance and such allowance is respectfully requested. Should the Examiner feel that any unresolved issues remain in this case, the undersigned may be contacted at the telephone number listed below to arrange for an issue resolving conference.

Applicant does not believe that any fee is due at this time. However, the Commissioner is hereby authorized to charge any fee that may have been overlooked to Deposit Account No. 10-0223.

Respectfully submitted,

Dated: 4/15/05

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